PATENT SPECIFICATION 871,377

DRAWINGS ATTACHED.

Date of Application and filing Complete Specification :
Sept. 25, 1957. *No. 30111/57.*

Application made in Switzerland on Sept. 28, 1956.
Application made in Switzerland on Sept. 19, 1957.

Complete Specification Published : June 28, 1961.

Index at Acceptance :—Class 139, A4B4A.

International Classification :—G04b.

COMPLETE SPECIFICATION.

Dial Illuminating Means for Watches.

We, ERNEST BOREL & CIE, S.A., a joint-stock company limited by shares, duly organized under the laws of the Confederation of Switzerland, of Maladiére 71, Neuchatel, Switzerland, do hereby declare the invention, for which we pray that a patent may be granted to us, and the method by which it is to be performed, to be particularly described in and by the following statement:—

This invention relates to dial illuminating means for watches, in particular to dial illuminating means which are arranged so that they can be located in the watch casing.

The objects of the invention will appear in the course of the following description.

One embodiment of the dial illuminating means according to the invention is represented diagrammatically and by way of example in the accompanying drawings.

In the drawings:—

Fig. 1 is a part sectional view of a wristwatch provided with a preferred embodiment of dial illuminating means according to the invention; and

Fig. 2 is a plan view on a smaller scale, and with some parts in section, of the watch of Fig. 1.

The watch represented in the drawings comprises a movement 1 located in a casing comprising a case band 2, a bottom 3 and a glass 4. The movement 1 is axially and radially held in place in the watchcase by a transparent enlargement ring 5. Spring means (not shown) are inserted between the bottom 3 and the ring 5 to urge the latter upwards as viewed in Fig. 1, to press the upper face of the ring under a shoulder 6 of the glass 4, and to press this glass shoulder 6 in turn under a shoulder 7 of the case band, this shoulder 7 constituting the bezel of the watchcase.

[*Price* 3*s.* 6*d.*]

The dial 8 is larger than the movement 7 so as to cover an inner portion of the ring 5. A lodging 9 is provided in this ring inner portion for the reception of an incandescent lamp 10. Since the lodging 9 is covered by the dial 8 the lamp 10 is hidden behind the dial.

Since the lamp 10 is embedded in the ring 5, the light rays emitted by this lamp are distributed uniformly in the said ring, which thus constitutes a circular source around the dial 8. To avoid losses through the side and the lower faces of the ring 5 these faces are covered with a coat of reflecting white varnish. The upper face of the ring 5 is however transparent so that the light rays emitted thereby when the lamp 10 is fed with current may pass over the dial 8 in the space formed between the dial and the glass 4. The circular luminous source thus provided around the dial and below the latter illuminates not only the visible face thereof together with all the indications appearing thereon, such as horal divisions, trade marks, ornamental designs, etc., but also the hands or other moving indicating elements used in lieu thereof.

A usual glass snap-fitted in a bezel could obviously be used instead of the glass represented in the drawings. Furthermore the transparent enlargement ring carrying the lamp could also be provided with an annular rim projecting from its upper face and extending above the dial in the space formed between this dial and the glass.

In other variants the watch dial could have the same diameter as the watch movement, and the transparent ring surrounding the movement and carrying the lamp could be used as support for opaque horal divisions. Furthermore, the dial could cover a more important inner portion of the enlargement ring

than in the example represented in the drawings. Such a dial would then be provided at its periphery with cutouts constituting ornamental designs, said cutouts being luminous when the lamp is alight. Instead of the ornamental designs mentioned, the said cutouts of the dial could also represent the horal divisions of the watch.

The lamp 10 of the watch represented in the drawings is fed by an accumulator 11 having the form of a flat disc. This accumulator is located between the movement 1 and the watchcase bottom 3. The lower outer pole of this accumulator is in contact with the bottom 3, whereas the upper inner pole thereof is connected to the watch movement by means of a small resilient plate 12. Since an enlargement ring 5 is inserted between the watch movement 1 and the watchcase, and since the transparent material of this ring is also insulating, the watch movement represented is electrically insulated from the watchcase. To avoid any short-circuit between the movement and the casing either through the winding and setting stem 13 or through the winding crown 14, the latter is provided with an insulating gasket 15 ensuring at the same time the fluid-tight sealing joint between the crown 14 and the watchcase pipe 16. Moreover an insulating washer 17 is set in a lodging 18 provided in the case band coaxially to the pipe 16, below the winding crown 14.

Since the winding stem 13 is electrically connected to the watch movement 1 and consequently to the upper inner pole of the accumulator 3, the latter may be recharged without opening the watchcase, by merely connecting one pole of a source of electrical energy, for instance a battery, to the watchcase and the other pole thereof to the crown 14.

The lamp 10 is connected itself to the movement 1 by means of a lead 19 and to the watchcase by means of a spring-pressed pusher 20 mounted in an opening of the case band 2. The inner end 21 of the movable pusher part only comes in contact with the bare lead 22 of the lamp when the pusher is pressed.

While one embodiment of the invention has been described in detail hereabove, it will be understood that various changes in the shapes, sizes and arrangement of parts could be resorted to within the scope of the appended claims.

WHAT WE CLAIM IS:—

1. Dial illuminating means for watches, comprising in combination an incandescent lamp arranged for location within a watch casing at the periphery of a watch movement located therein, a source of electric energy to feed said lamp and also arranged for location in the watch casing, an enlargement ring surrounding the watch movement and securing the latter in its casing, said enlargement ring being made of a transparent or translucent material and having at least a portion extending beyond the periphery of the watch dial, and a lodging provided in said enlargement ring to receive said lamp, said enlargement ring together with said lamp thus constituting a circular luminous source surrounding the dial when said lamp is fed with electric energy by said source.

2. Dial illuminating means as claimed in Claim 1, said enlargement ring having an inner portion covered by the dial and said lodging for the lamp being provided in said inner portion.

3. Dial illuminating means as claimed in Claim 1 or 2, located in a watch in which a control stem of the movement extends through an opening in the watch casing and carries outside the latter, a crown for actuating said stem, said dial illuminating means being characterized by the fact that said source of electric energy consists of an accumulator arranged to have one pole connected to the watch casing and another pole connected to the watch movement, the latter being insulated from the casing by means of said enlargement ring, said dial illuminating means further comprising insulating means arranged for insulating said stem and said crown from said casing.

4. Dial illuminating means as claimed in Claim 3, said insulating means of the stem and the crown comprising a sealing ring of insulating material inserted between said crown and a pipe fixed to said casing, and an insulating washer located around said pipe, between said crown and said casing.

5. Dial illuminating means substantially as described with reference to the accompanying drawings.

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Abingdon: Printed for Her Majesty's Stationery Office, by Burgess & Son (Abingdon), Ltd.—1961.
Published at The Patent Office, 25, Southampton Buildings, London, W.C.2,
from which copies may be obtained.

871,377 COMPLETE SPECIFICATION
1 SHEET
This drawing is a reproduction of the Original on a reduced scale.

Fig. 1

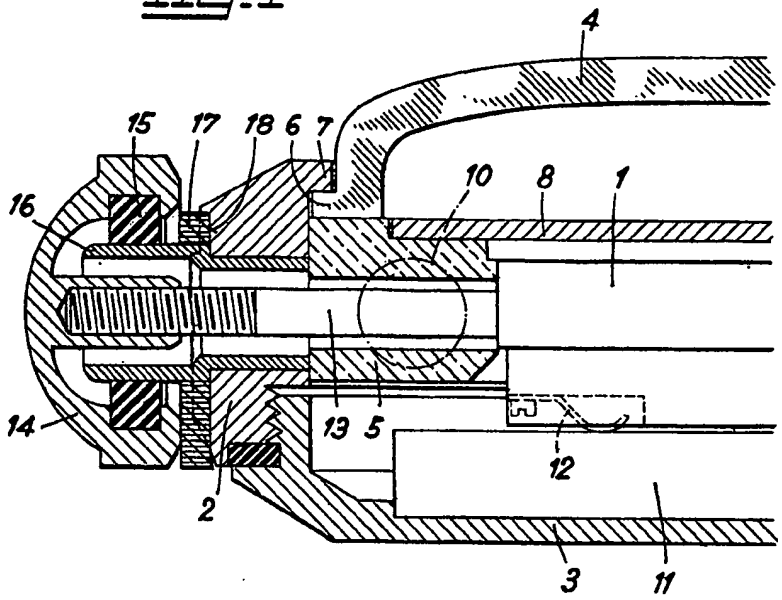

Fig. 2